**Technology**: Apparatus and Methods for Evaluation of Joint Prosthesis Stability

**VA ID Number**: 12-203

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**Location**: Asheville, NC

**Topic**: Diagnostic

**USPTO Patent Application**: Provisional Application 62/418,701

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**Abstract**: A system for measuring the in-vivo placement of an implanted prosthesis is provided. The system includes at least two sensors placed into the body of a patient near an implanted prosthesis such as a total hip replacement implant. The sensors are activated by an external device and upon activation, the sensors produce wireless data that is received and analyzed by the external device. The external device analyzes the sensor data to determine a position of the implanted prosthesis. Multiple positions of the implanted prosthesis are determined over time, for example while the patient is walking, to determine any micro movement of the implanted prosthesis. In this fashion, early detection of unstable implanted prosthesis is achieved.

**Opportunity**: There are over 7 million people in the United States that are living with a hip or knee replacement. Of these 7 million, approximately 2.5 million (1.4 million women and 1.1 million men) had hip replacements and 4.7 million (3.0 million women and 1.7 million men) had knee replacements based on 2010 data. Studies indicate that hip and knee replacement prevalence in the total United States population is approximately 0.8% and 1.5%, respectively. Over 1 million total hip and knee replacement surgeries are performed annually. In 2010 (the most recent year of data from the Centers for Disease Control and Prevention), there were over 310,000 total hip replacements performed on patients aged 45 and older. The number of hip replacements has increased significantly in recent years from approximately 140,000 in 2000. The rate of hip replacements has increased from approximately 143 per 100,000 people to 257.

VA is interested in a commercial partner to further this technology through a license or a collaborative agreement.